

MD EXPLORER®

PERFORMANCE

7.0 PERFORMANCE SPECIFICATIONS (IMPERIAL).

		5,500 lb	6,000 lb	6,250 lb	6,500 lb
Maximum Cruise Speed	KTAS Sea Level ISA	136 (157)	135 (155)	134 (154)	132 kt (152 mph)
	KTAS 5,000 ft. ISA	39 (160)	136 (157)	135 (155)	132 kt (152 mph)
Maximum Permitted Speed	V _{NE} (KCAS) at Sea Level	140 (161)	140 (161)	140 (161)	134 kt (154 mph)
Maximum Range	Sea Level, ISA	262 (302)	262 (298)	257 (296)	*317 nm (364 mi)
	5,000 ft, ISA	303 (349)	297 (342)	293 (337)	*328 nm (377 mi)
Maximum Endurance	Sea Level, ISA	3.1	3.0	2.9	*3.4 hr
	5,000 ft, ISA	3.4	3.3	3.2	*3.7 hr
Maximum Rate-of-Climb (AEO)	Sea Level Standard	2,760	2,420	2,270	2,120 ft/min
	ISA +20°C Day	2,740	2,390	2,230	2,080 ft/min
Maximum Operating Altitude	Density Altitude	20,000	20,000	20,000	14,000 ft.
Service Ceiling	ISA @ 100 ft/min	20,000	20,000	18,600	14,000 ft
HIGE (Hover-in-Ground Effect)	Standard Day	15,300	13,400	12,200	**10,650 ft
	ISA +20°C Day	13,000	10,300	9,000	**9,400 ft
HOGE (Hover Out-of-Ground Effect)	Standard Day	14,000	11,400	10,400	8,780 ft
	ISA +20°C Day	11,100	8,300	6,900	7,480 ft

Certification Limits

Standard Weight	Maximum Internal Takeoff Weight	6,500 lb
	Maximum External Gross Weight	6,500 lb 6,900 lb
Maximum Takeoff and Landing Density Altitude		12,000 ft 5,000 ft
Empty Weight	Standard Configuration	3,375 lb
	Industrial Configuration	3,226 lb
Useful Load	Maximum Internal	3,125 lb
	Maximum Internal + External	3,525 lb
Cargo Hook Structural Rating		3,000 lb
*Fuel Capacity	Usable	1308 lb (192.4gal)
	Total	1327 lb (195.1gal)

Powerplant: Two Pratt & Whitney Canada PW207E, rated at 530 kw (710 shp) each, derated for reliability and safety to:
Take-off 410kw (550 shp)Max Continuous Power 373 kw (500 shp)

* main + auxiliary tank: total fuel load of 1308 lb, no reserves

** HIGE operations are currently limited by the takeoff and landing limit of 5,000 ft.

MD EXPLORER®

PERFORMANCE

PERFORMANCE SPECIFICATIONS (Metric)

		2495 kg	2722 kg	2835kg	2948 kg
Maximum Cruise Speed	KTAS Sea Level ISA	252	250	248	245 kph
	KTAS 1524 m ISA	258	252	250	245 kph
Maximum Permitted Speed	V _{NE} (KCAS) at Sea Level	259	259	259	248 kph
Maximum Range	Sea Level, ISA	485	480	476	*587 km
	1524 m, ISA	561	550	543	*608 km
Maximum Endurance	Sea Level, ISA	3.1	3.0	2.9	*3.4 hr
	1524 m, ISA	3.4	3.3	3.2	*3.7 hr
Maximum Rate-of-Climb (AEO)	Sea Level Standard	14.0	12.3	11.5	10.8 m/s
	ISA +20°C Day	13.9	12.1	11.3	10.6 m/s
Maximum Operating Altitude	Density Altitude	6096	6096	6096	4267 m
Service Ceiling	ISA @ 30.5 m/min	6096	6096	5669	4267 m
HIGE (Hover-in-Ground Effect)	Standard Day	4663	4084	3719	**3246 m
	ISA +20°C Day	3962	3139	2743	**3865 m
HOGE (Hover Out-of-Ground Effect)	Standard Day	4267	3475	3170	2676 m
	ISA +20°C Day	3383	2530	2103	2280 m

Certification Limits

Standard Weight	Maximum Internal Takeoff Weight	2948 kg
	Maximum External Gross Weight	3130 kg
Maximum Takeoff and Landing Density Altitude		3658 m
		1524 m
Empty Weight	Standard Configuration	1531 kg
	Industrial Configuration	1463 kg
Useful Load	Maximum Internal	1417 kg
	Maximum Internal + External	1599 kg
Cargo Hook Structural Rating		1361 kg
*Fuel Capacity	Usable	593 kg (728 L)
	Total	602 kg (739 L)

Powerplant: Two Pratt & Whitney Canada PW207E, rated at 530 kw (710 shp) each, derated for reliability and safety to:

Take-off 410 kw (550 shp) Max Continuous Power 373 kw (500 shp)

* main + auxiliary tank: total fuel load of 1308 lb, no reserves

** HIGE operations are currently limited by the takeoff and landing limit of 1524 meters.

MD EXPLORER®

PERFORMANCE

7.1. Gross Weight Worksheet.

		Example	Mission #1	Mission #2
		U S E F U L L O A D	P A Y L O A D	Empty Weight
	Mission Equipment Avionics, Comm, Nav, Floats, Etc.		200 lb (91 kg)	
	Pilot		170 lb (77 kg)	
	Copilot		0 lb (0 kg)	
	Fuel		1,097 lb (498 kg)	
	Passenger, Baggage, Cargo		1,658 lb (752 kg)	
	Take-off GW		6,500 lb (2948 kg)	

MD EXPLORER®

PERFORMANCE

7.1.1. Weight statement summary.

<i>Standard Weight Empty*</i>	3,375 lb.	(1531 kg)
<i>Crew (1 pilot)</i>	170 lb.	(77 kg)
<i>Operational Weight Empty</i>	3,545 lb.	(1608 kg)
<i>Maximum Standard Fuel</i>	1,097 lb.	(498 kg)
<i>Additional Payload</i>	1,858 lb.	(842 kg)

<i>Maximum take-off weight, internal payload</i>	6,500 lb.	(2948 kg)
--	-----------	-----------

- (Please note that many items sold by other manufacturers as "options" are standard in the MD Explorer (MD 902).

<i>Maximum take-off weight</i>	6,900 lb.	(3130 kg)
--------------------------------	-----------	-----------

- "Industrial configuration" empty weight for maximum external loads may be obtained by removing the following standard baseline items"

<i>Copilot Seat</i>	19.2 lb.	(8.7 kg)
<i>6 passenger seats @ 13.8 lb each</i>	82.8 lb.	(37.6 kg)
<i>Interior, utility cabin trim</i>	36.3 lb.	(16.5 kg)
<i>2 cabin doors @ 16.2 lb. each</i>	32.4 lb.	(14.7 kg)
<i>2 passenger steps</i>	10.6 lb.	(4.7 kg)

<i>Baseline weight removed²³</i>	181.3 lb.	(82.2 kg)
---	-----------	-----------

<i>New "industrial empty weight</i>	3,194 lb.	(1449 kg)
-------------------------------------	-----------	-----------

Notes:

1. All weight in excess of 6,500 pounds must be jettisonable.
2. Maximum weight permitted on the cargo hook is 3,000 lb (1361 kg)
3. The above example is for comparative purposes only. The aircraft owners are responsible for analyzing their own weight summaries.

MD EXPLORER®

PERFORMANCE

7.1.2. Hover Ceiling, AEO

Use of Chart: The following example explains the correct use of the IGE chart in Figure 20.

Example:

Wanted: Maximum gross weight for hover at 3.5 feet skid height at takeoff power.

Known: MPA = 7000 feet; OAT = 30°C; cabin heat off and A/C on; 25% electrical load.

Method: Enter the chart at 30° OAT and move vertically to the 7000 PA curve (dashed lines). At this point, move directly to the left of the chart and read from the gross weight scale 6300 pounds. Reduce gross weight capability by 45 lb for A/C on and an additional 35 lb for increased electrical load. Calculated gross weight for hover is 6500 lb.



MD EXPLORER® PERFORMANCE

7.1.3. AEO HIGE, Hover In Ground Effect, Standard Engine Inlet

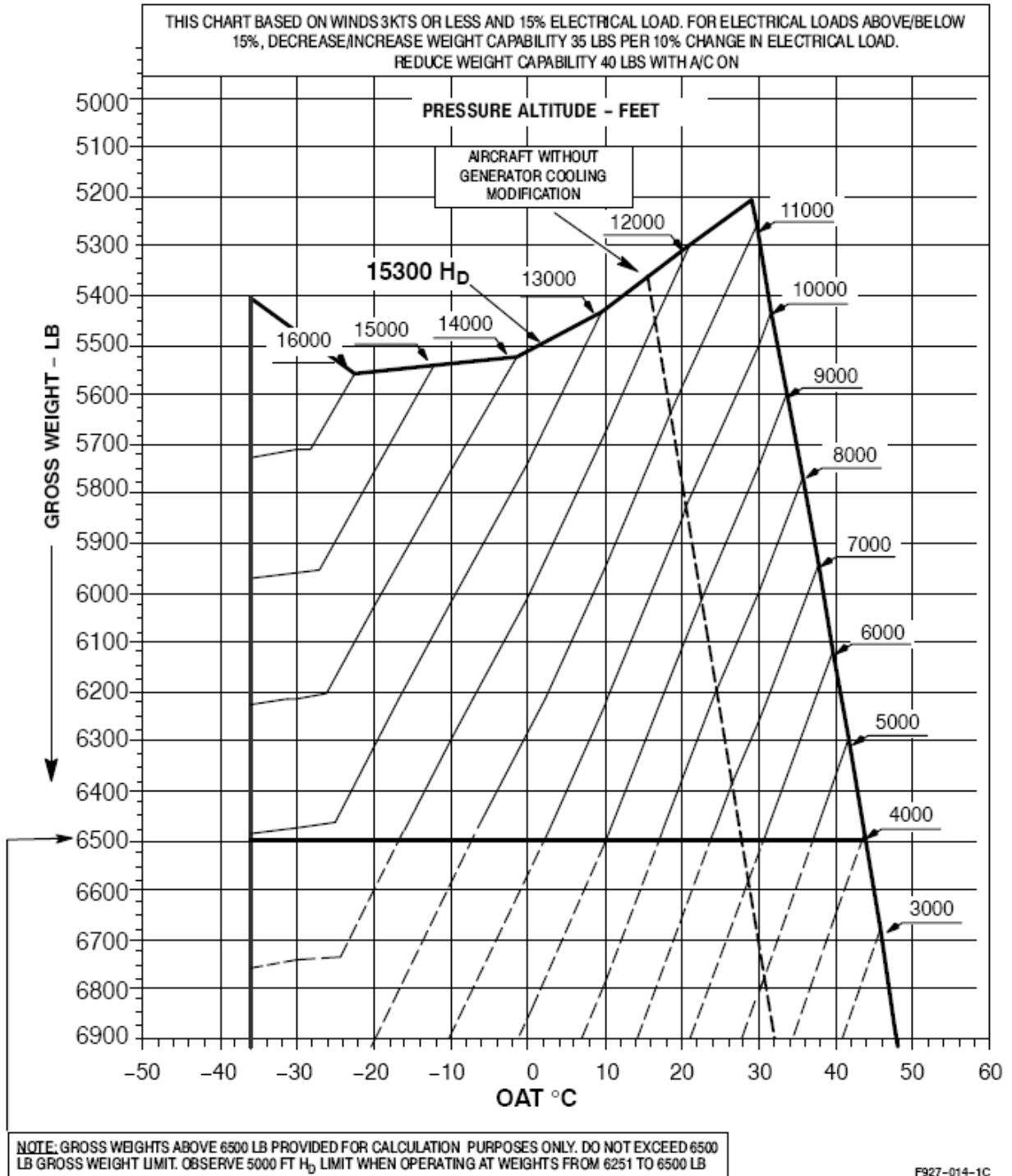


Figure 20. AEO HIGE, Standard Engine Inlet, Take-off Power, Cabin Heat Off

MD EXPLORER®

PERFORMANCE

7.1.4. AEO HOGE, Hover-Out-of-Ground Effect, Standard Engine Inlet

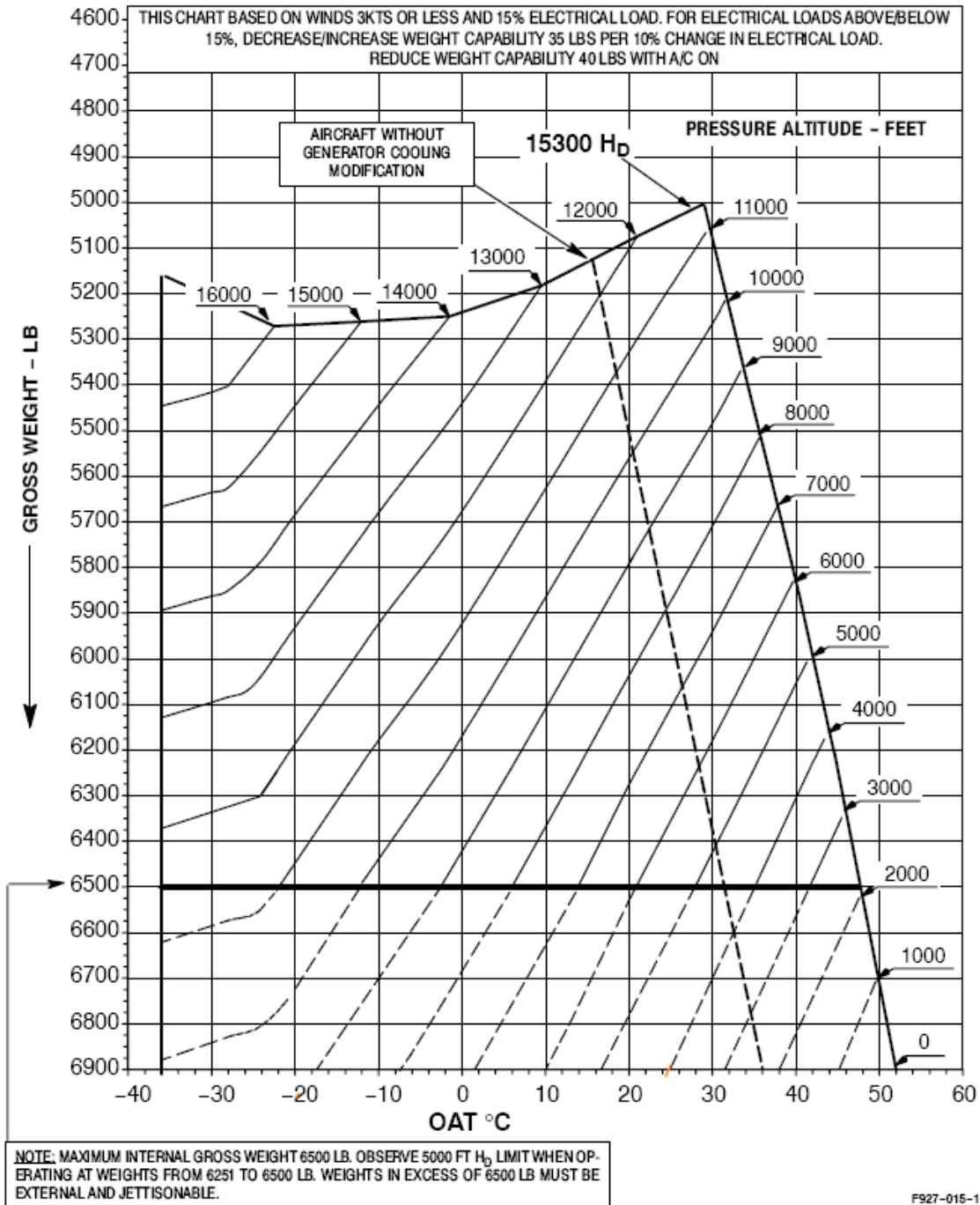


Figure 21. AEO HOGE, Standard Engine Inlet, Take-off Power, Cabin Heat Off

MD EXPLORER® PERFORMANCE

7.1.5. AEO HIGE, Hover-In-Ground Effect, IPS Installed

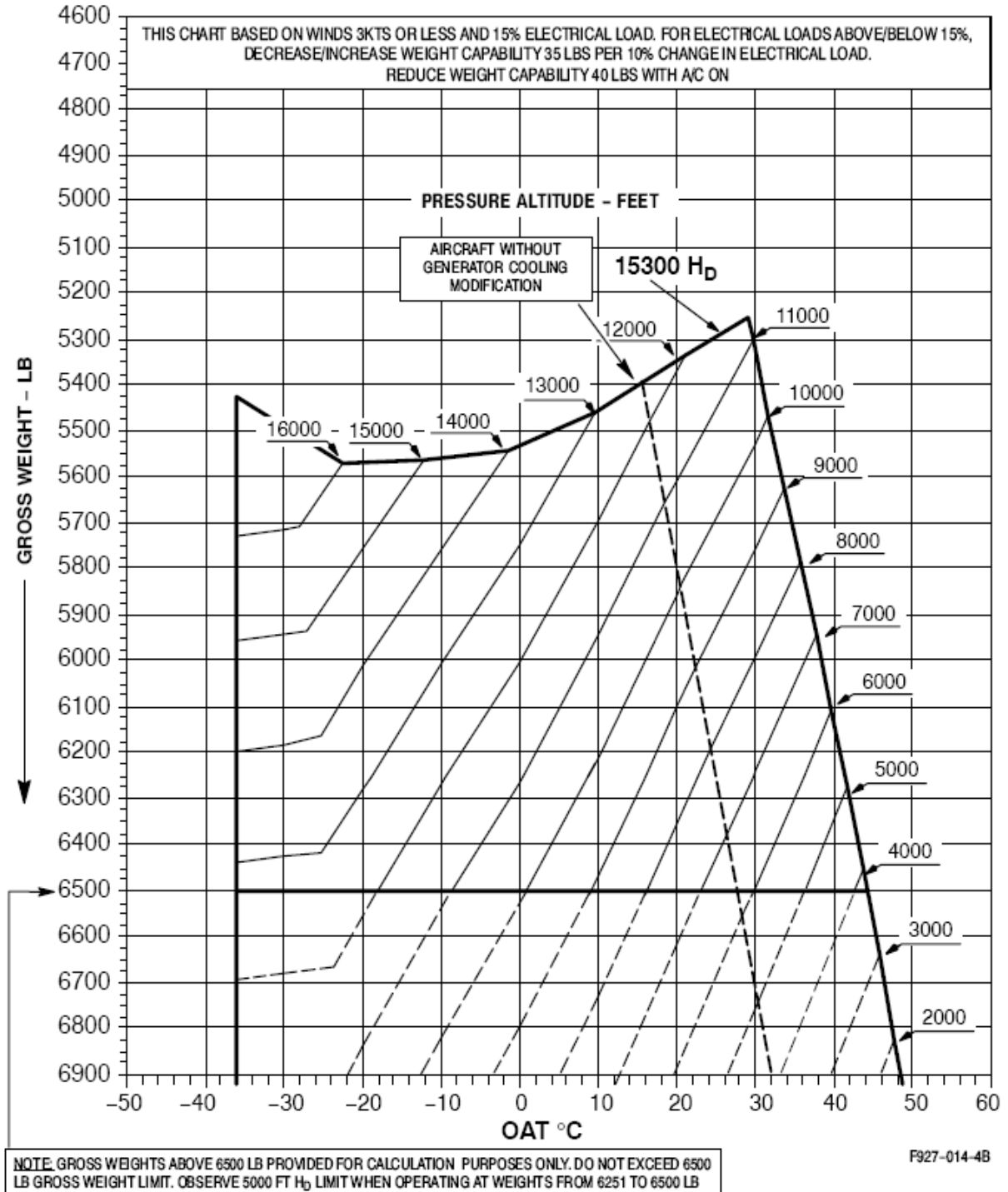


Figure 22. AEO HIGE, IPS Installed. Take-off Power, Cabin Heat Off

MD EXPLORER®

PERFORMANCE

7.1.6. AEO HOGE, Hover-Out-of-Ground Effect, IPS Installed

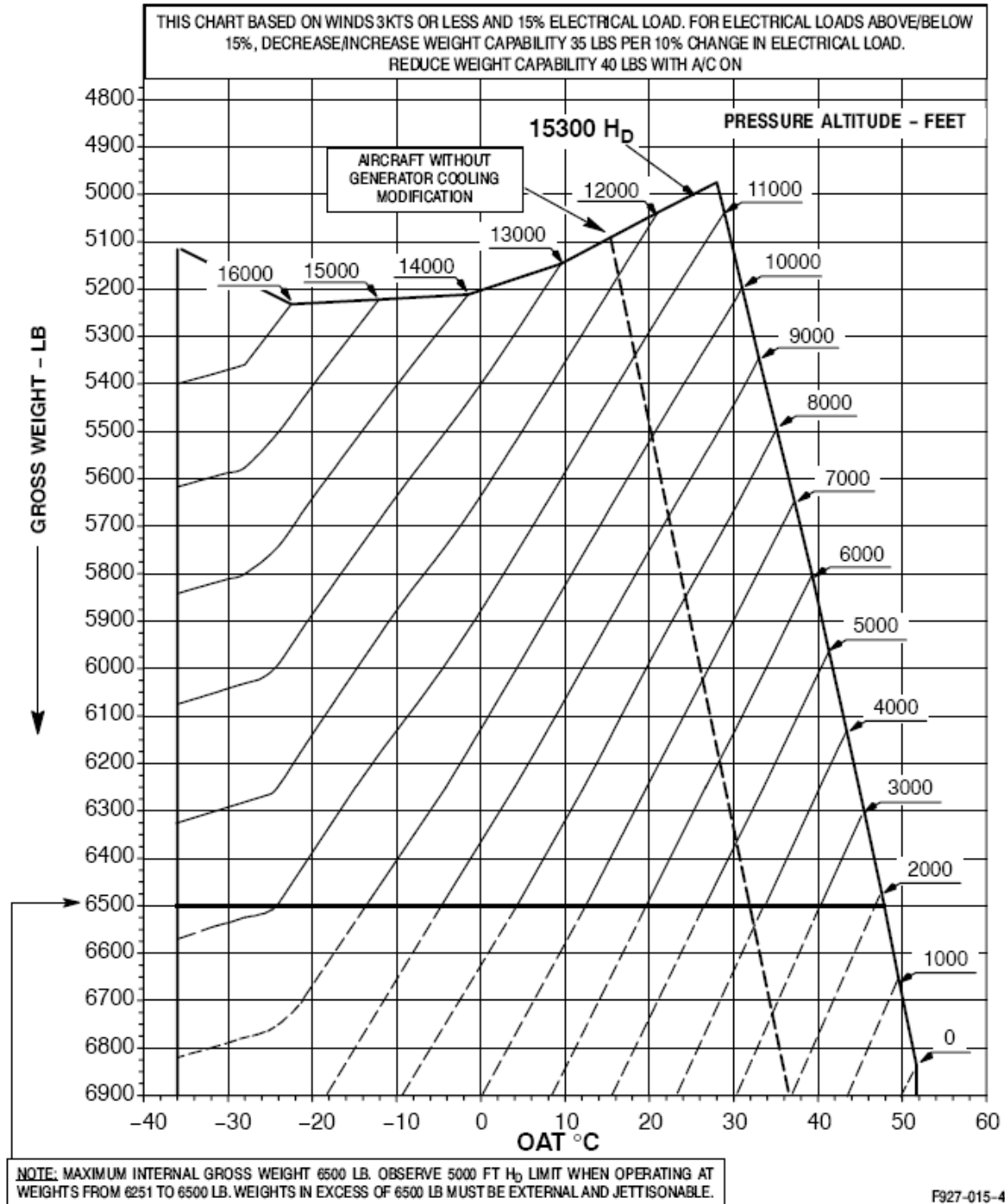


Figure 23 AEO HOGE, IPS Installed. Take-off Power, Cabin Heat Off

MD EXPLORER® PERFORMANCE

7.1.7. OEI HOGE, Hover-Out-of-Ground Effect, Standard Engine Inlet

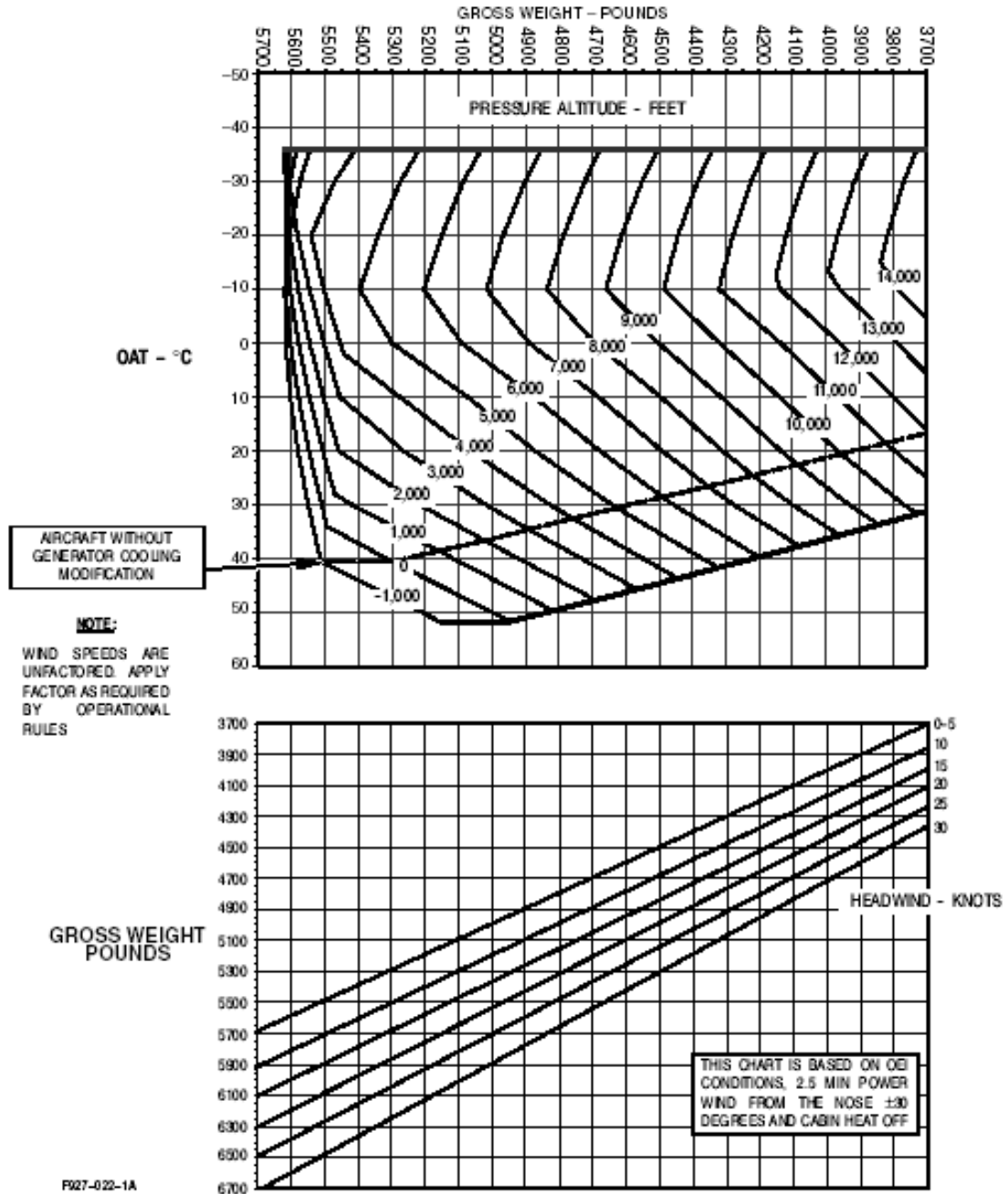


Figure 24. OEI HOGE, Standard Engine Inlet, 2.5 Minute OEI Power

MD EXPLORER®

PERFORMANCE

7.1.8. OEI HOGE, Hover-Out-of-Ground Effect, IPS Installed

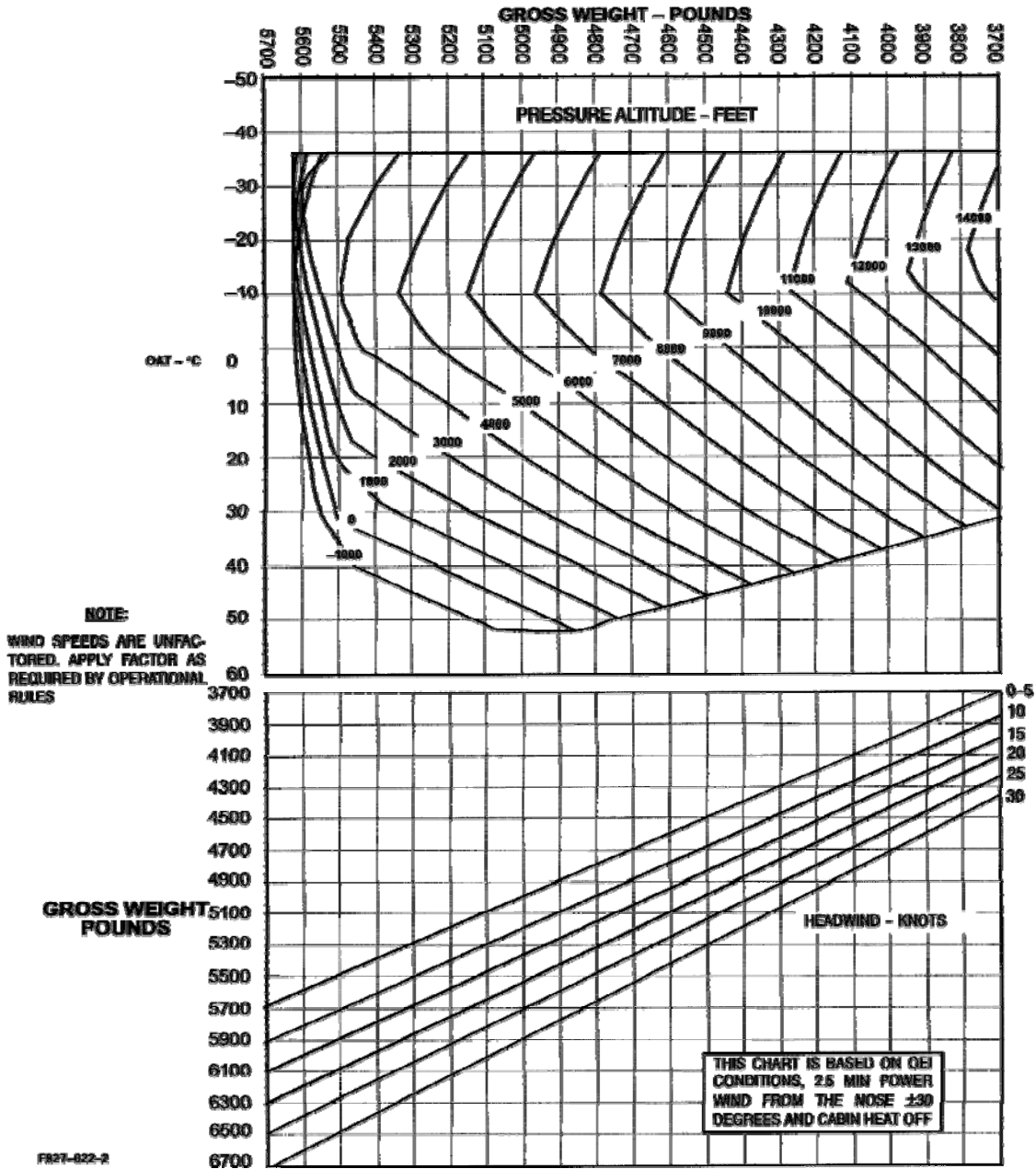


Figure 25. OEI HOGE, IPS Installed, 2.5 Minute OEI Power

MD EXPLORER®

PERFORMANCE

7.1.9. Speed for Best Range

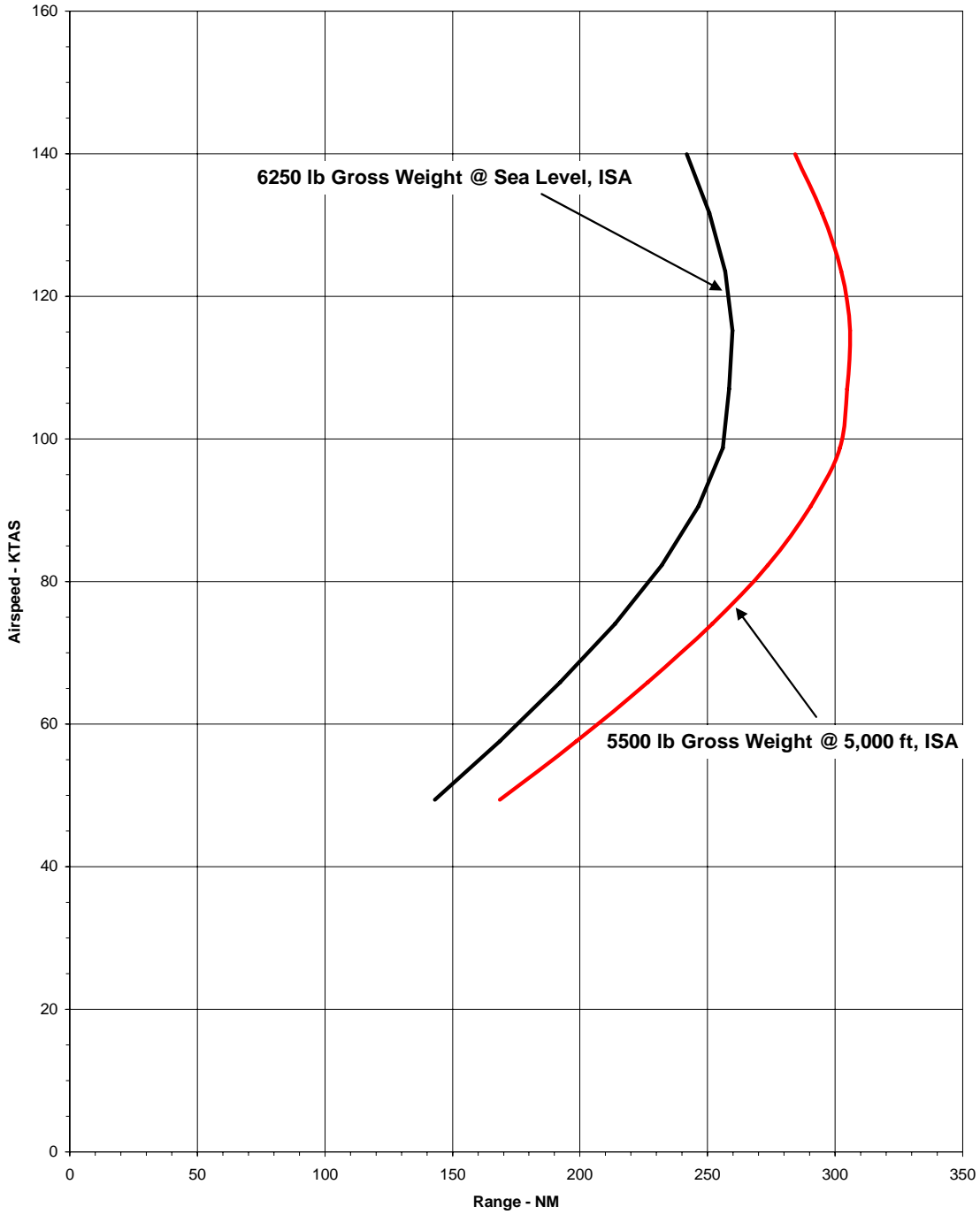


Figure 26. Speed for Best Range

MD EXPLORER®

PERFORMANCE

7.1.10. Speed for Best Endurance

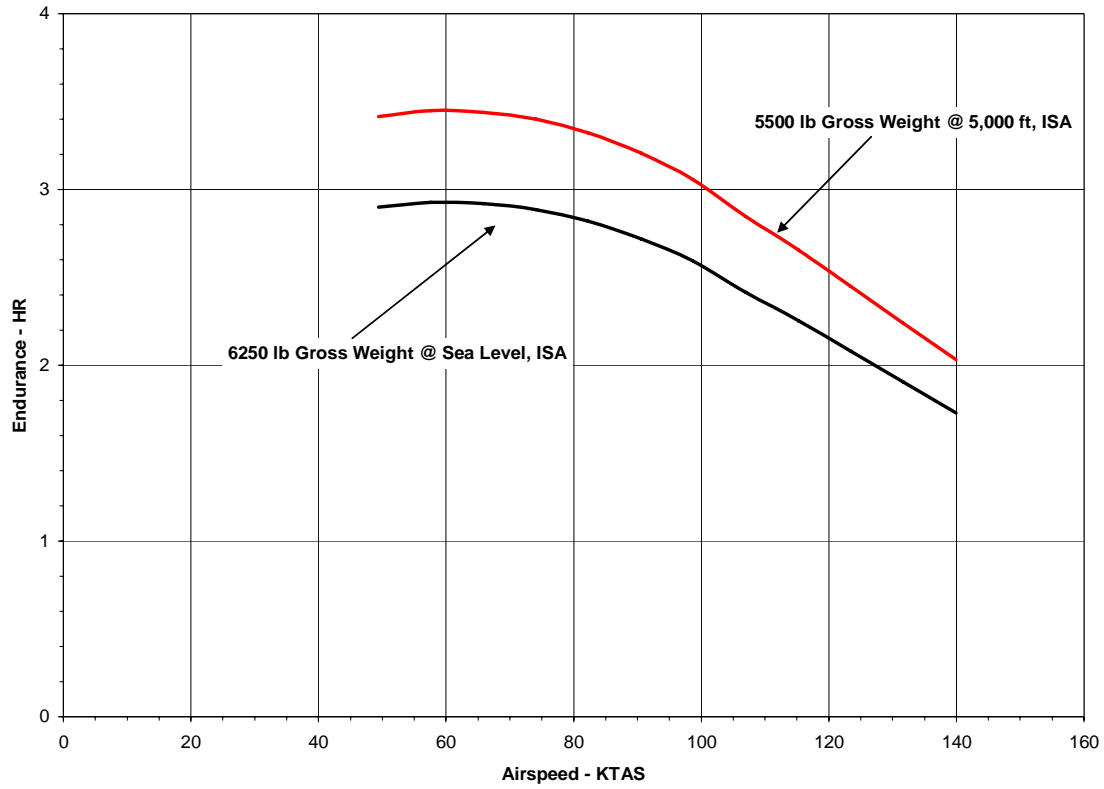


Figure 27. Speed for Best Endurance

MD EXPLORER®

PERFORMANCE

7.1.11. Fuel Flow, AEO, Sea Level, ISA (15°C)

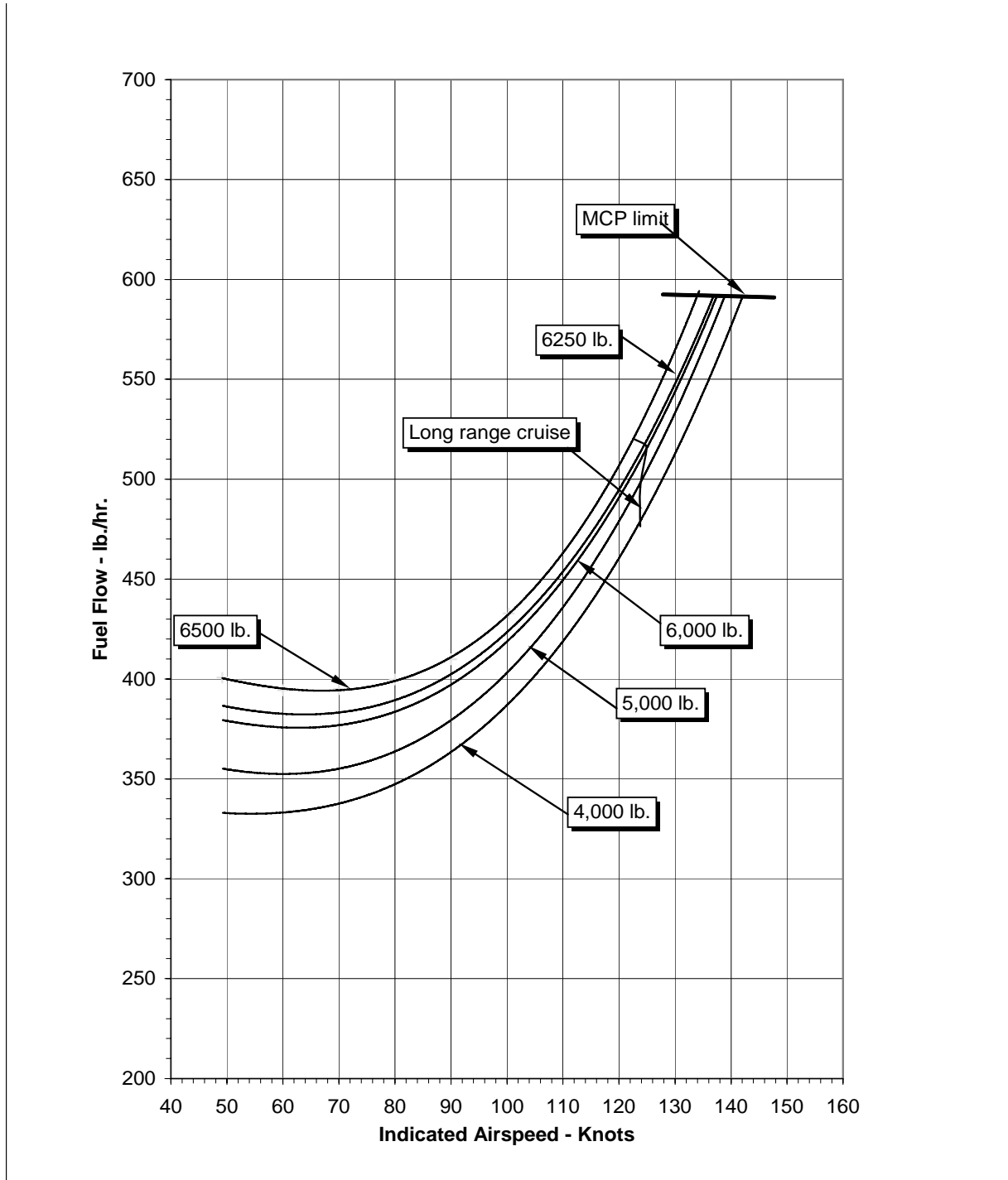


Figure 28. Fuel Flow, AEO, Sea Level, ISA (15°C)

MD EXPLORER®

PERFORMANCE

7.1.12. Fuel Flow, AEO, 4000 Feet Hp, ISA (7°C)

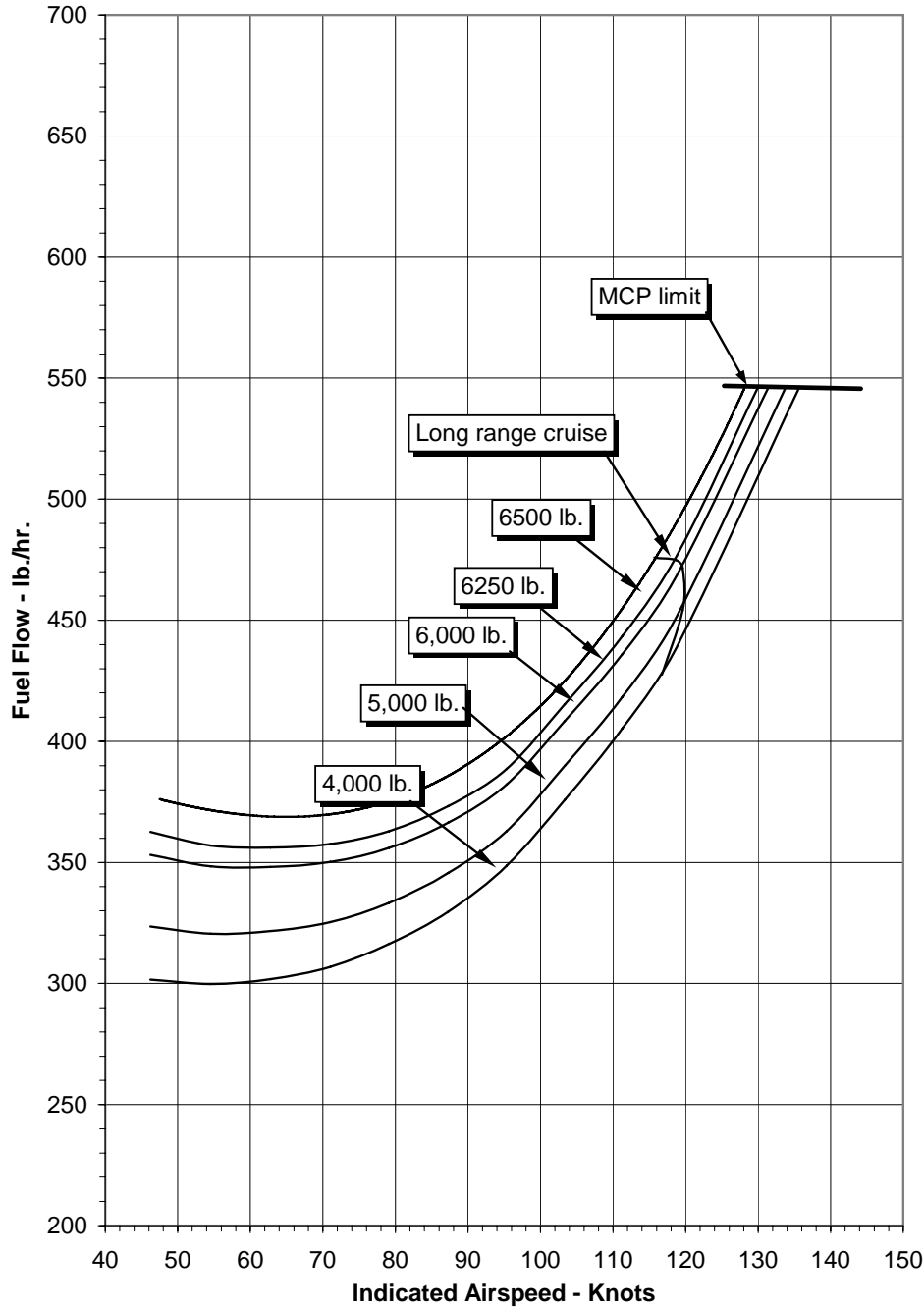


Figure 29. Fuel Flow, AEO, 4000 Feet Hp, ISA (7°C)

MD EXPLORER®

PERFORMANCE

7.1.13. Fuel Flow, AEO, Sea Level, ISA +20°C (35°C)

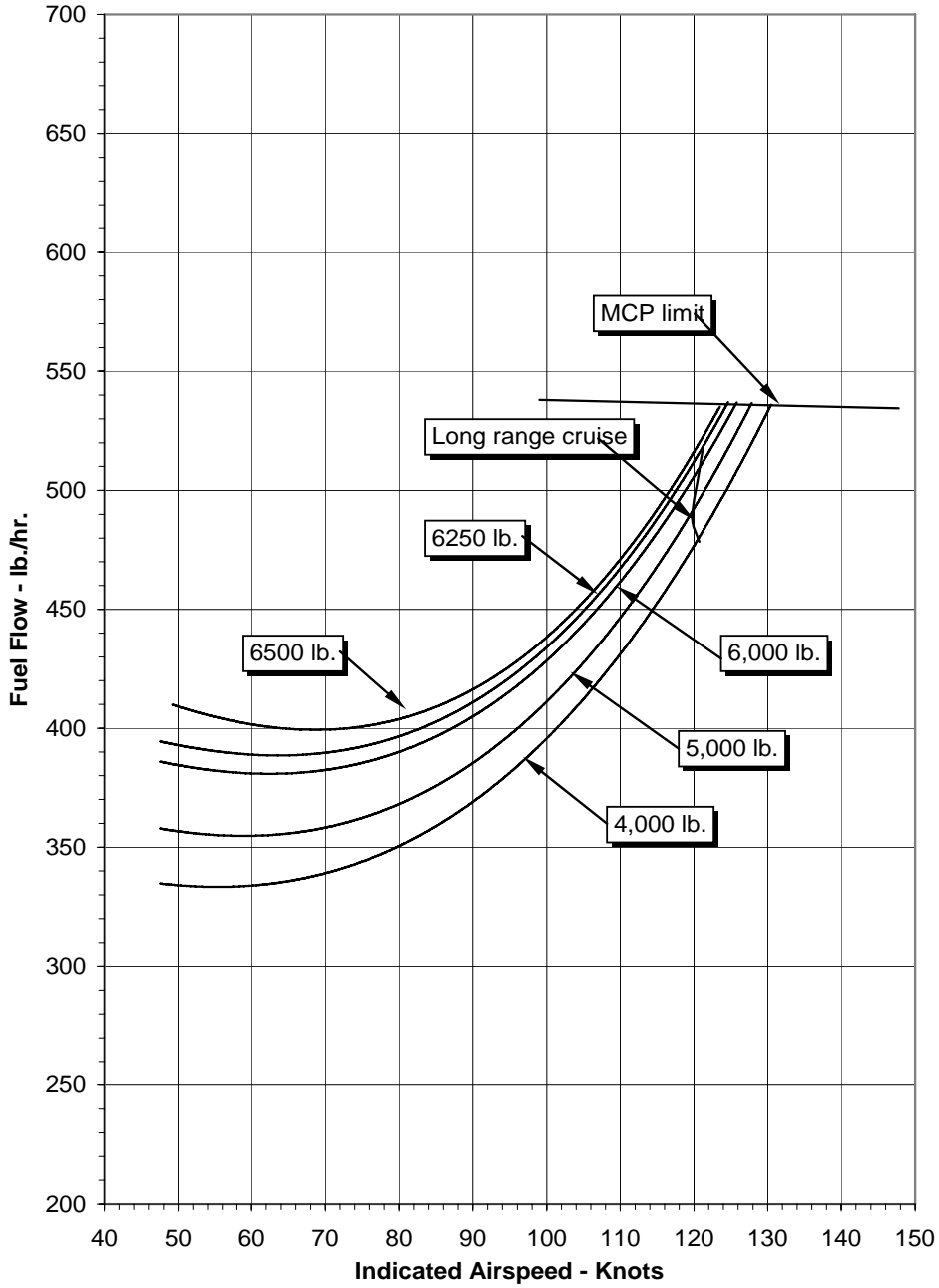


Figure 30. Fuel Flow, AEO, Sea Level, ISA +20°C (35°C)

MD EXPLORER®

PERFORMANCE

7.1.14. Fuel Flow, AEO, 4000 Feet Hp, ISA +20°C (27°C)

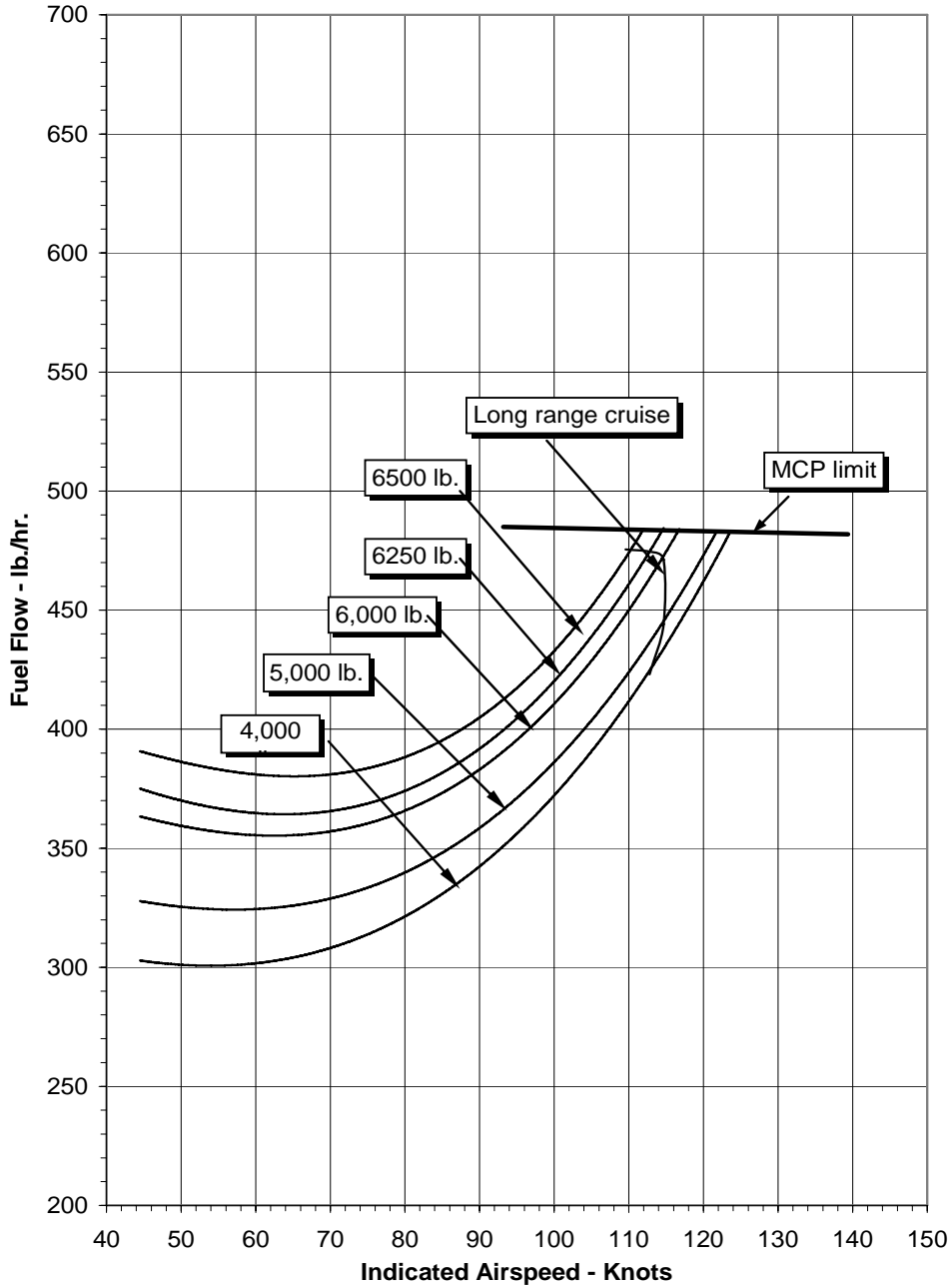


Figure 31. Fuel Flow, AEO, 4000 Feet Hp, ISA +20°C (27°C)

MD EXPLORER®

PERFORMANCE

Key performance estimates of the MD Explorer are summarized in the following figures. Based on standard configuration.

7.1.15. Payload - range.

Gross weight - (empty weight) - (pilot weight) - (mission equipment options) = payload. 3,000 lb

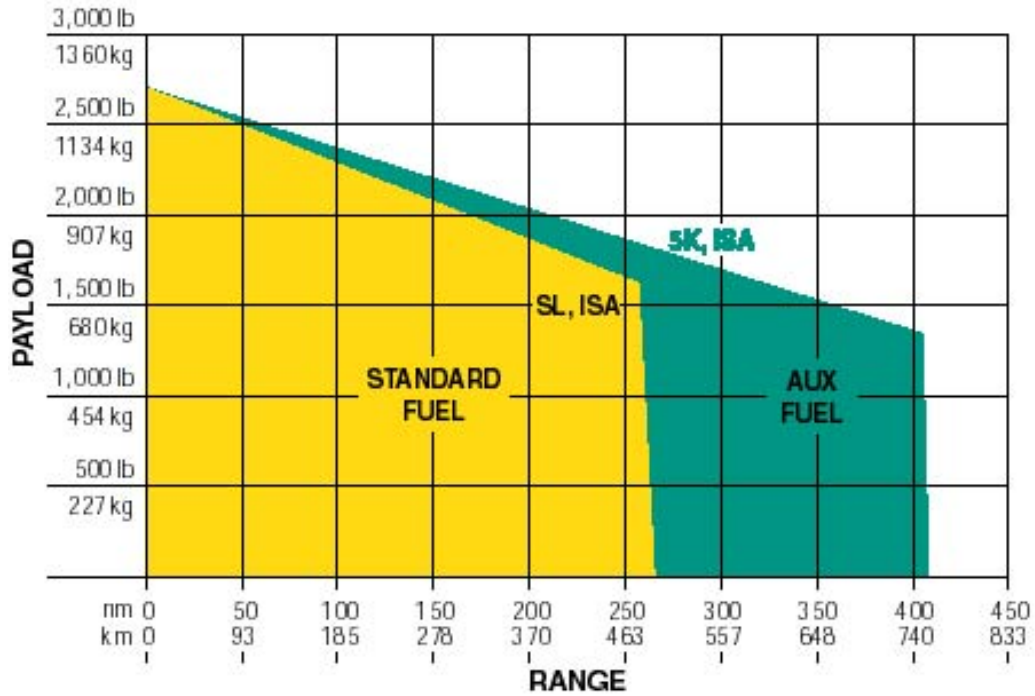


Figure 32. Payload - Range Capability

MD EXPLORER®

PERFORMANCE

7.1.16. Height velocity diagram.

There is no height-velocity diagram for operating the MD Explorer® between sea level and 7,000 feet density altitude for gross weights of 6,000 lb. or less. For weights above 6,000 pounds, refer to the Rotorcraft Flight Manual, figure 5-19.

7.2. Miscellaneous.

7.2.1. Vibrations.

Uniquely low vibration levels in all flight conditions are the result of a five-bladed flexbeam rotor system tuned to the fuselage and an elastomeric acoustic isolator mount between the transmission and support structure. In addition, independent control systems for the vertical stabilizers provide extremely smooth transitions to/from hover and forward flight.

7.2.2. Temperature.

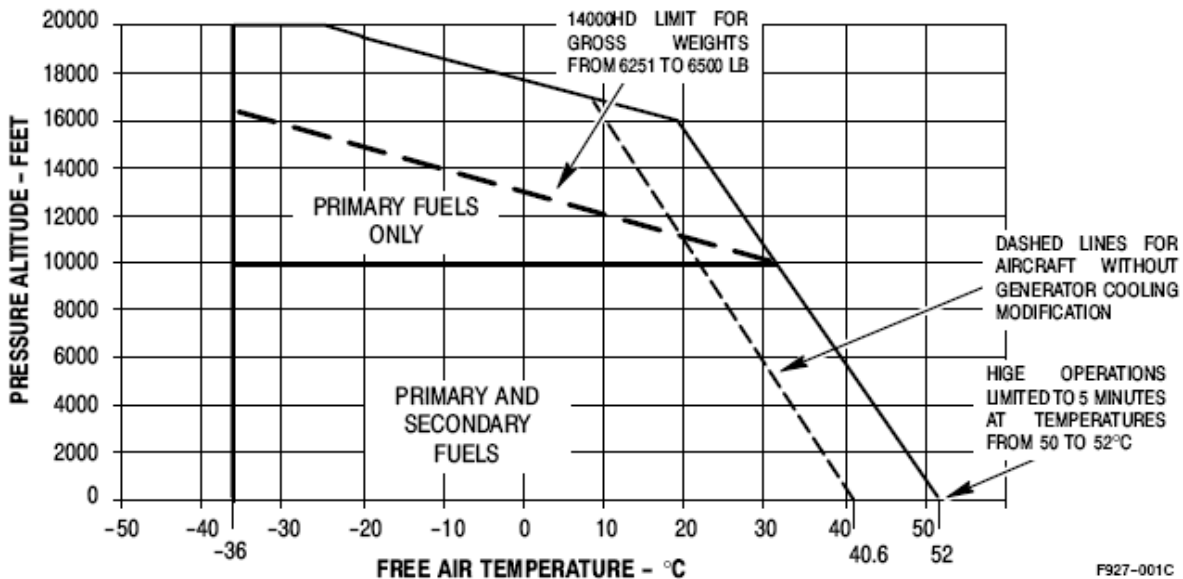


Figure 33. Ambient Temperature Envelope

MD EXPLORER®

PERFORMANCE

7.2.3. Noise.

The FAR Part 36 Appendix H noise levels for the MD Explorer® clearly show that the MD Explorer® has the greatest compliance margin of any helicopter yet tested to both the ICAO and the FAA Stage II noise requirements.

Flight Regime	Measured Value	ICAO Requirement	Compliance Margin
Take-off	85.4 EPNdB	94.3	8.9
Level flyover	83.5 EPNdB	93.3	9.8
Approach / Land	89.62 EPNdB	95.3	5.68
		Average=	8.13

By surpassing the stringent Appendix H requirement, the MD Explorer® maintains low sound levels in the aircraft's entire surrounding environment that are the result of flight conditions most noticeable to the public. Previous Appendix J requirement tests only measured limited spectrum sound levels only directly under the aircraft's flight path during the singular level flyover flight condition.

